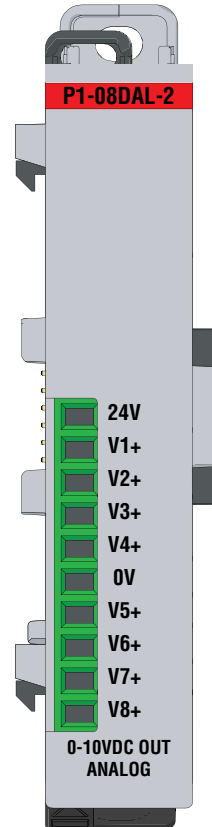


Output Specifications	
<b>Channels per Module</b>	8
<b>Output Type</b>	Voltage Sourcing at 10mA max
<b>Module Signal Output Range</b>	0–10 V
<b>Signal Resolution</b>	12-bit
<b>Resolution Value of LSB (least significant bit)</b>	0–10 V = 2.44 mV / count 1 LSB = 1 count
<b>Data Range</b>	0 to 4095 counts
<b>Output Value in Fault Mode</b>	0V
<b>Load Impedance</b>	≥1000Ω
<b>Maximum Capacitive Load</b>	0.01 μF
<b>Allowed Load Type</b>	Grounded
<b>Maximum Inaccuracy</b>	0.5% of range (including temperature drift)
<b>Maximum Full Scale Calibration Error (Including Offset)</b>	±0.2% of range
<b>Maximum Offset Calibration Error</b>	±0.2% of range
<b>Accuracy vs. Temperature</b>	±75 PPM / °C maximum full-scale calibration change (±0.0025% of range / °C)
<b>Max Crosstalk at DC, 50/60Hz</b>	-72dB, 1 LSB
<b>Linearity Error (End to End)</b>	±4 LSB max., (±0.1% of full scale) Monotonic with no missing codes
<b>Output Stability and Repeatability</b>	±2% LSB after 10 min. warm up (typical)
<b>Output Ripple</b>	±0.1% of full scale
<b>Output Settling Time</b>	300μ max., 5μ min. (full scale range)
<b>All Channel Update Rate</b>	1ms
<b>Maximum Continuous Overload</b>	Outputs current limited to 40mA typical Continuous overloads on multiple outputs can damage the module.
<b>Type of Output Protection</b>	0.1μF Transient Suppressor
<b>Output Signal at Power Up and Power Down</b>	0V
<b>External Power Supply Required</b>	24VDC (-20% / +25%), 85mA



## P1-08DAL-2 Analog Output

The P1-08DAL-2 Voltage Analog Output Module provides eight 12-bit channels of 0–10 VDC analog signals for use with the Productivity1000 system.

Output Specifications	1
General Specifications	2
Terminal Block Specifications	2
Wiring Diagram and Schematic	3
Module Installation Procedure	4
QR Code	4
Wiring Options	5
Module Configuration	5
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Non-Linear Scaling	6
Warning	8

**Terminal Block sold separately, (see wiring options on page 5).**

Warranty: Thirty-day money-back guarantee. Two-year limited replacement (See [www.productivity1000.com](http://www.productivity1000.com) for details).

General Specifications	
<b>Operating Temperature</b>	0° to 60°C (32° to 140°F)
<b>Storage Temperature</b>	-20° to 70°C (-4° to 158°F)
<b>Humidity</b>	5 to 95% (non-condensing)
<b>Environmental Air</b>	No corrosive gases permitted
<b>Vibration</b>	IEC60068-2-6 (Test Fc)
<b>Shock</b>	IEC60068-2-27 (Test Ea)
<b>Field to Logic Side Isolation</b>	1800VAC applied for 1 second
<b>Insulation Resistance</b>	> 10M $\Omega$ @ 500VDC
<b>Heat Dissipation</b>	3250mW
<b>Enclosure Type</b>	Open Equipment
<b>Module Location</b>	Any I/O position in a Productivity1000 System
<b>Field Wiring</b>	Removable terminal block (sold separately). Use ZIPLink Wiring System optional See "Wiring Options" on page 5.
<b>EU Directive</b>	See the "EU Directive" topic in the Productivity Suite Help File. Information can also be obtained at: <a href="http://www.productivity1000.com">www.productivity1000.com</a>
<b>Terminal Type (sold separately)</b>	10-position Removable Terminal Block
<b>Weight</b>	72g (2.5 oz)
<b>Agency Approvals</b>	UL 61010-1 and 61010-2-201 file E139594, Canada & USA CE (EN 61131-2 EMC and EN 61010-1 and EN 61010-2-201 Safety)*

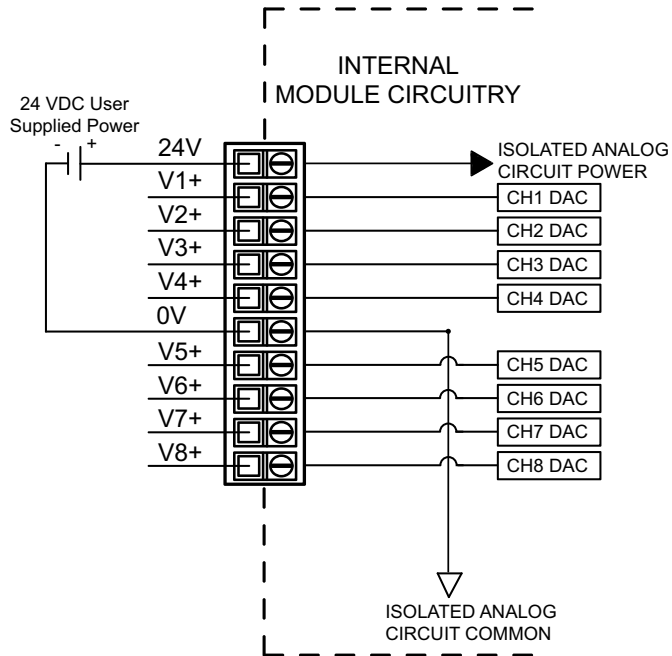
\*See CE Declaration of Conformance for details.

Terminal Block Specifications		
Part Number	P1-10RTB	P1-10RTB-1
<b>Positions</b>	10 Screw Terminals	10 Spring Clamp Terminals
<b>Wire Range</b>	30–16 AWG (0.051–1.31 mm <sup>2</sup> ) Solid / Stranded Conductor 3/64 in (1.2 mm) Insulation Max. 1/4 in (6–7 mm) Strip Length	28–16 AWG (0.081–1.31 mm <sup>2</sup> ) Solid / Stranded Conductor 3/64 in (1.2 mm) Insulation Max. 19/64 in (7–8 mm) Strip Length
<b>Conductors</b>	"USE COPPER CONDUCTORS, 75°C" or equivalent.	
<b>Screw Driver</b>	0.1 in (2.5 mm) Maximum*	
<b>Screw Size</b>	M2	N/A
<b>Screw Torque</b>	2.5 lb-in (0.28 N-m)	N/A

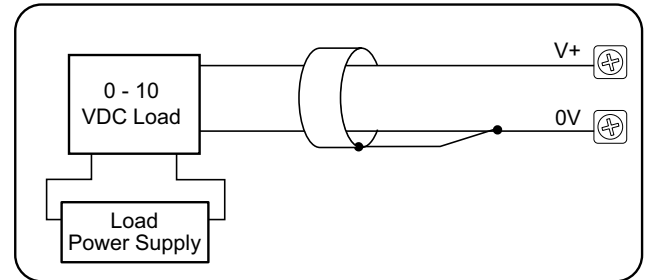
\*Recommended Screw Driver TW-SD-MSL-1

# P1-08DAL-2 Schematic

# P1-08DAL-2 Wiring Diagram



## Voltage Output Circuits



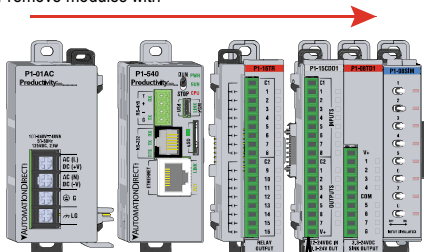
Note: Shield is connected to common at the source device.

# Module Installation

# QR Code

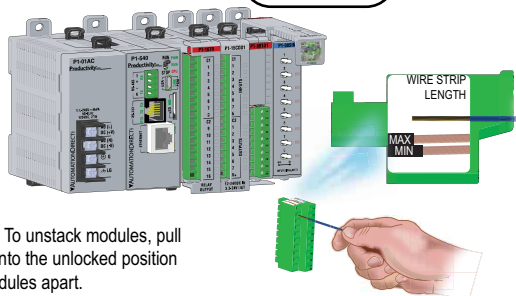
**WARNING:** Do not add or remove modules with field power applied.

**Step One:** With latch in "locked" position, align connectors on the side of each module and stack by pressing together. Click indicates lock is engaged.

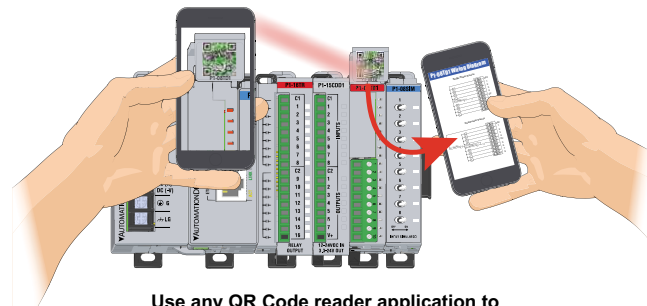
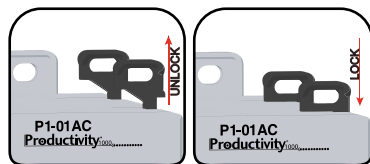


**Step Two:** Attach field wiring using the removable terminal block or ZIPLink wiring system.

Check all latches are secure after modules are connected.



**Step Three:** To unstack modules, pull locking latch up into the unlocked position and then pull modules apart.

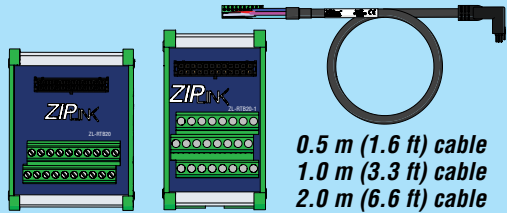


Use any QR Code reader application to display the module's product insert.

# Module Configuration

## Wiring Options

### 1 ZIPLink Feed Through Modules and Cables<sup>1</sup>

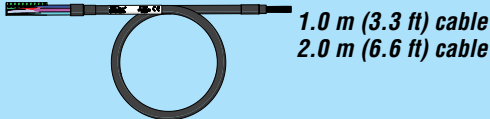


ZL-RTB20  
ZL-RTB20-1

ZL-P1-CBL10  
ZL-P1-CBL10-1  
ZL-P1-CBL10-2

0.5 m (1.6 ft) cable  
1.0 m (3.3 ft) cable  
2.0 m (6.6 ft) cable

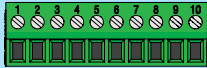
### 2 Terminal Block with pigtail cable



ZL-P1-CBL10-1P  
ZL-P1-CBL10-2P

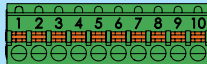
1.0 m (3.3 ft) cable  
2.0 m (6.6 ft) cable

### 3 Screw Terminal Block only



P1-10RTB  
(Quantity 1)

### 4 Spring Clamp Terminal Block only



P1-10RTB-1  
(Quantity 1)

### 5 Accessories<sup>2</sup>



ZL-RTB-COM

TW-SD-SL-1

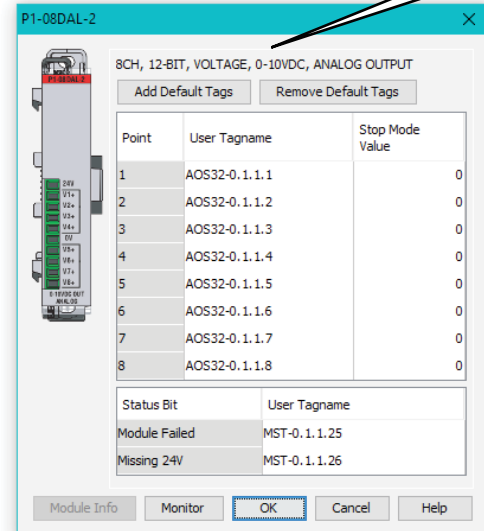
TW-SD-MSL-1

1. Cable + ZIPLink Module = Complete System

2. ZL-RTB-COM provides a common connection point for power or ground

Using the Hardware Configuration tool in the Productivity Suite programming software, drag and drop the P1-08DAL-2 module into the base configuration.

If desired, assign a *User Tagname* to each input point (channel) selected and to each *Status Bit Item*. A *Stop Mode Value* may be assigned.



# Linear Scaling

The Scale (Linear) function can be used to:

- Convert an application specific range to range which is native to the analog output module.
- Make other linear conversions in ranges appropriate to the application.

Select the Input and Output tags appropriate for the application. Convert raw input signals to engineering units for use in the program, or convert engineering units to output signals for control purposes

Input	Output
min	min
max	max

# Non-Linear Scaling

The Scale (Non-Linear) function can be used for Non-Linear applications.

Input value	Desired Output
0	0
1	5
2	1
3	1.55
4	2.25
5	3.07
6	4
6.5	5
7	7
0	0
0	0
0	0
0	0
0	0
0	0

Enter actual output values for each input value break point.

Input	Output
min	min
max	max



**WARNING:** To minimize the risk of potential safety problems, you should follow all applicable local and national codes that regulate the installation and operation of your equipment. These codes vary from area to area and it is your responsibility to determine which codes should be followed, and to verify that the equipment, installation, and operation are in compliance with the latest revision of these codes.

***Equipment damage or serious injury to personnel can result from the failure to follow all applicable codes and standards. We do not guarantee the products described in this publication are suitable for your particular application, nor do we assume any responsibility for your product design, installation, or operation.***

If you have any questions concerning the installation or operation of this equipment, or if you need additional information, please call Technical Support at 770-844-4200.

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